EXHIBIT 22
(Excerpted)

US009219959B2

(12) **United States Patent**
Kallai et al.

(10) **Patent No.: US 9,219,959 B2**
(45) **Date of Patent: Dec. 22, 2015**

(54) **MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM**

(71) Applicant: **Sonos, Inc**, Santa Barbara, CA (US)

(72) Inventors: **Christopher Kallai**, Santa Barbara, CA (US); **Michael Darrell Andrew Ericson**, Santa Barbara, CA (US); **Robert A. Lambourne**, Santa Barbara, CA (US); **Robert Reimann**, Santa Barbara, CA (US); **Mark Triplett**, St. Charles, IL (US)

(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/299,847**

(22) Filed: **Jun. 9, 2014**

(65) **Prior Publication Data**

US 2014/0286507 A1 Sep. 25, 2014

Related U.S. Application Data

(63) Continuation of application No. 13/083,499, filed on Apr. 8, 2011, now Pat. No. 8,788,080, which is a continuation-in-part of application No. 13/013,740, filed on Jan. 25, 2011, which is a continuation-in-part

(Continued)

(51) **Int. Cl.**
G06F 17/00 (2006.01)
H04R 3/12 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***H04R 3/12*** (2013.01); ***H04R 27/00*** (2013.01); ***H04S 7/30*** (2013.01); *H04R 2227/005* (2013.01); *H04R 2420/07* (2013.01)

(58) **Field of Classification Search**
CPC G11B 19/02; G06F 17/30026; H04R 3/12; H04R 27/00; H04R 2227/005; H04R 2420/07; H04S 7/30
USPC 700/94
See application file for complete search history.

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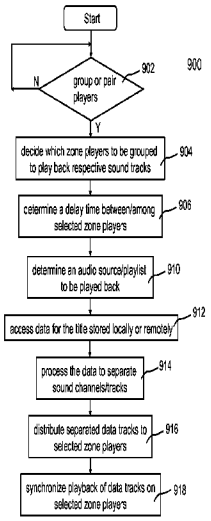
Primary Examiner — Paul McCord
(74) *Attorney, Agent, or Firm* — McDonnell Boehnen Hulbert & Berghoff LLP

(57) **ABSTRACT**

Technology for grouping, consolidating, and pairing individual playback devices with network capability (players) to stimulate a multi-channel listening environment is disclosed. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved. Such embodiments may be used to produce stereo and multi-channel audio environments for television and movies.

22 Claims, 21 Drawing Sheets



Related U.S. Application Data

of application No. 11/853,790, filed on Sep. 11, 2007, now Pat. No. 8,483,853.

(60) Provisional application No. 60/825,407, filed on Sep. 12, 2006.

(51) **Int. Cl.**

H04R 27/00	(2006.01)
H04S 7/00	(2006.01)

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These embodiments and many additional embodiments are described more below. Further, the detailed description is presented largely in terms of illustrative environments, systems, procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it is understood to those skilled in the art that certain embodiments of the present invention may be practiced without certain, specific details. In other instances, well known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the embodiments.

Reference herein to "embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of this phrase in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. The embodiments described herein, explicitly and implicitly understood by one skilled in the art, may be combined with other embodiments.

II. Example Environment

Referring now to the drawings, in which like numerals may refer to like parts throughout the several views. FIG. **1** shows an exemplary configuration **100** in which certain embodiments may be practiced. The configuration **100** may represent, but not be limited to, a part of a residential home, a business building, or a complex with multiple zones. There are a number of multimedia players of which three examples **102**, **104** and **106** are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein. It is understood that a zone can comprise more than one zone player.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are generally in digital format and can be transported or streamed over a data network. To facilitate the understanding of the example environment of FIG. **1**, it is assumed that the configuration **100** represents a home. Though, it is understood that this technology is not limited to its place of application. Referring back to FIG. **1**, the zone players **102** and **104** may be located in one or two of the bedrooms while the zone player **106** may be installed or positioned in a living room. All of the zone players **102**, **104**, and **106** are coupled directly or indirectly to a data network **108**. In addition, a computing device **110** is shown to be coupled on the network **108**. In reality, any other device such as a home gateway device, a storage device, or an MP3 player may be coupled to the network **108** as well.

The network **108** may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players **102**, **104**, and **106** are coupled to the network **108** by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players **102**, **104**, and **106** are part of a local area network that communicates with a wide area network (e.g., the Internet). In still another example, all devices including the zone players **102**, **104** and **106** and a controller **142** forms an ad-hoc network and may be specifically named, e.g., a household identifier: Smith Family, to be differentiated from a similar neighboring setup with a household identifier, e.g., Kallai Family.

Many devices on the network **108** are configured to download and store audio sources. For example, the computing device **110** can download audio sources, such as music or audio associated with videos, from the Internet (e.g., the "cloud") or some other source and store the downloaded audio sources locally for sharing with other devices on the Internet or the network **108**. The computing device **110** or any of the zone players **102**, **104**, and **106** can also be configured to receive streaming audio. Shown as a stereo system, the device **112** is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with certain embodiments, the various audio sources may be shared among the devices on the network **108**.

Two or more zone players (e.g., any two or more of the zone players **102**, **104**, and **106**) may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one zone player to another zone player or an existing zone group.

In certain embodiments, there are two or more zone players in one environment (e.g., a living room in a house). Instead of grouping these two zone players to play back the same audio source in synchrony, these two zone players may be configured to play two separate sounds in left and right channels. In other words, the stereo effects of a sound are reproduced or enhanced through these two zone players, one for the left sound and the other for the right sound. Likewise, for a 3-channel (or 2.1 sound effects) sound, three such zone players may be reconfigured as if there are three speakers: left and right speakers and a subwoofer to form a stereo sound. The details of the reconfiguring the zone players and operating these audio products are described more below. Similar configurations with multiple channels (greater than 3, such as 4, 5, 6, 7, 9 channels and so on) also apply. For example, configurations that use more than two channels may be useful in television and theater type settings, where video content such as in the form of television and movies is played together with audio content that contains more than two channels. Further, certain music might similarly be encoded with more than two channel sound.

In certain embodiments, two or more zone players may be consolidated to form a single, consolidated zone player. The consolidated zone player may further be paired with a single zone player or yet another consolidated zone player. A consolidated zone player may comprise one or more individual playback devices. Each playback device of a consolidated playback device is preferably set in a consolidated mode.

According to some embodiments, one can continue to do any of: group, consolidate, and pair until a desired configuration is complete. The actions of grouping, consolidation, and pairing are preferably performed through a control interface and not by physically connecting and re-connecting speaker wire, for example, to individual, discrete speakers to create different configurations. As such, certain embodiments described herein provide a more flexible and dynamic platform through which sound reproduction can be offered to the end-user.

It is understood that the technology described herein is not limited to its place of application. For example, it is understood that zones and zone players, and the embodiments described herein, may also be used in vehicles, on water craft, airplanes, amphitheaters, outdoors, along the streets in a village or city, and so on, in addition to homes, offices, gyms,

US009219959C1

(12) EX PARTE REEXAMINATION CERTIFICATE (11080th)

United States Patent
Kallai et al.

(10) **Number: US 9,219,959 C1**
(45) **Certificate Issued: Apr. 5, 2017**

(54) **MULTI-CHANNEL PAIRING IN A MEDIA SYSTEM**

(71) Applicant: **Sonos, Inc.**, Santa Barbara, CA (US)

(72) Inventors: **Christopher Kallai**, Santa Barbara, CA (US); **Michael Darrell Andrew Ericson**, Santa Barbara, CA (US); **Robert A. Lambourne**, Santa Barbara, CA (US); **Robert Reimann**, Santa Barbara, CA (US); **Mark Triplett**, St. Charles, IL (US)

(73) Assignee: **SONOS, INC.**, Santa Barbara, CA (US)

Reexamination Request:
No. 90/013,756, May 25, 2016

Reexamination Certificate for:

Patent No.:	**9,219,959**
Issued:	**Dec. 22, 2015**
Appl. No.:	**14/299,847**
Filed:	**Jun. 9, 2014**

Related U.S. Application Data

(63) Continuation of application No. 13/083,499, filed on Apr. 8, 2011, now Pat. No. 8,788,080, which is a continuation-in-part of application No. 13/013,740, filed on Jan. 25, 2011, now Pat. No. 9,202,509, which is a continuation-in-part of application No. 11/853,790, filed on Sep. 11, 2007, now Pat. No. 8,483,853.

(60) Provisional application No. 60/825,407, filed on Sep. 12, 2006.

(51) **Int. Cl.**

G06F 17/00	(2006.01)
H04S 7/00	(2006.01)
H04R 27/00	(2006.01)
H04R 3/12	(2006.01)
H04R 5/04	(2006.01)
H03G 3/20	(2006.01)
G06F 3/16	(2006.01)

(52) **U.S. Cl.**
CPC ***H04R 27/00*** (2013.01); ***G06F 3/165*** (2013.01); ***H03G 3/20*** (2013.01); ***H04R 3/12*** (2013.01); ***H04R 5/04*** (2013.01); ***H04S 7/30*** (2013.01); *H04R 2227/005* (2013.01); *H04R 2420/01* (2013.01); *H04R 2420/07* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/013,756, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Christopher E. Lee

(57) **ABSTRACT**

Technology for grouping, consolidating, and pairing individual playback devices with network capability (players) to stimulate a multi-channel listening environment is disclosed. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved. Such embodiments may be used to produce stereo and multi-channel audio environments for television and movies.